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EXAMINER
ONI, OLUBUSOLA

ART UNIT	PAPER NUMBER
2168	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/698,178	UDESHI ET AL.
	Examiner	Art Unit	
	OLUBUSOLA ONI	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/31/2003*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

1.   This action is responsive to communication: Application, filed on 10/31/2003.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1-6, 21-23, 27-29, 30-35,39, 40-47, 51-55 are rejected under 35

U.S.C. 102(b) as being anticipated by Steven Kanefsky (U.S. Pub No. 2001/0044327)

hereinafter "Kanefsky".

For claim 1, Kanefsky teaches "a method for performing an operation on a

hierarchical data tree (See paragraph [0072-0074, fig. 4&5]), comprising: visiting an

anchor node in the tree" (See paragraph [0067-0068, fig. 4]);

"retrieving data from the anchor node and a plurality of neighboring nodes each

potentially affected by the operation"(See paragraph [0020, 0067-0068, fig. 4,5&6]);

"querying a cache for a key representing the anchor node and the plurality of

neighboring nodes in a pre-operation condition based on the retrieved data, wherein

the cache stores pre-operation/post-operation data pairs"(See paragraph [0020-

0023,0032-0035])

"if the *query* finds a match, replacing the pre-operation retrieved data with cached

post-operation data" (See paragraph [0021-0022]); and

"if the query does not find a match, performing the operation on the pre-operation

retrieved data to generate post-operation data, replacing the pre-operation retrieved

data with the post-operation data and storing the post-operation data in the cache with

the associated pre-operation retrieved data"(See paragraph [0031-0022, 0038]).

For claim 2, Kanefsky teaches "wherein the retrieving data from the anchor

node and a plurality of neighboring nodes each potentially affected by the operation

further comprises retrieving data from at least one neighboring node affecting the

operation"(See paragraph [0037]).

For claim 3, Kanefsky teaches "wherein the pre-operation retrieved data is

replaced with cached post-operation data for a subset of the nodes for which pre-

operation data was retrieved" (See paragraph [0038, 0045]).

For claim 4, Kanefsky teaches "wherein the operation assigns the anchor node

to one of a plurality of equivalence classes and maintains a count of the number of

nodes in each of the plurality of equivalence classes"(See paragraph [0055-0056,

fig.4]).

For claim 5, Kanefsky teaches "wherein the hierarchical data tree represents a physical structure and the operation comprises modifying the retrieved data to reflect the addition of material to the physical structure"(See paragraph [0058, fig. 4&5]).

For claim 6, Kanefsky teaches "wherein the hierarchical data tree represents a physical structure and the operation comprises modifying the retrieved data to reflect the removal of material from the physical structure" (See paragraph [0063-0064]).

For claim 21, Kanefsky teaches "expunging non-matched data from the cache when the cache attains a predetermined occupancy" (See paragraph [0063-0060])

For claim 22, Kanefsky teaches "wherein replacing the retrieved data with cached data comprises replacing the retrieved data with pointers to previously examined nodes represented by the cached data" (See paragraph [0037]).

For claim 23, Kanefsky teaches "wherein the data retrieval, cache querying and data replacement based on results of the cache querying is repeated with each unique node in the tree treated as anchor node" (See paragraph [0021-0022, 0038]).

For claim 27, Kanefsky teaches " a processing system for performing an operation on a hierarchical data tree"(See paragraph [0072-0074, fig. 4&5]), comprising;

"means for retrieving data from an anchor node in the tree and plurality of neighboring nodes affected by the operation" (See paragraph [0020, 0067-0068])

"means for querying a cache for key representative of the node and the plurality of neighboring nodes based on the retrieved data" (See paragraph [0021-0022])

"means for performing the operation on the retrieved data to generate post-operation data, replacing the retrieved data with the post-operation data and storing the post-operation data in the cache based on the key if the query does not find a match" (See paragraph[0021-0022, 0038])

For claims 28-29, 40-41, these claims have substantially the same limitation as claim 4. These limitations have already been addressed in the rejection of claim 4. Therefore, they are rejected on similar grounds corresponding to the arguments given to the rejected claim 4 above.

For claims 30 and 42, thess claims have substantially the same limitation as claim 5. These limitations have already been addressed in the rejection of claim 5. Therefore, they are rejected on similar grounds corresponding to the arguments given to the rejected claim 5 above.

For claims 31 and 43, these claims have substantially the same limitation as claim 6. These limitations have already been addressed in the rejection of claim 6.

Therefore, they are rejected on similar grounds corresponding to the arguments given

to the rejected claim 6 above.

For claims 32 and 44, these claims have substantially the same limitation as

claim 7. These limitations have already been addressed in the rejection of claim 7.

Therefore, they are rejected on similar grounds corresponding to.the arguments given

to the rejected claim 7 above.

For claims 33 and 45 these claims have substantially the same limitation as

claim 21. These limitations have already been addressed in the rejection of claim 21.

Therefore, they are rejected on similar grounds corresponding to the arguments given

to the rejected claim 21 above.

For claims 34 and 46, these claims have substantially the same limitation as

claim 22. These limitations have already been addressed in the rejection of claim 22.

Therefore, they are rejected on similar grounds corresponding to the arguments given

to the rejected claim 22 above.

For claims 35 and 47, these claims have substantially the same limitation as

claim 23. These limitations have already been addressed in the rejection of claim 23.

Therefore, they are rejected on similar grounds corresponding to the arguments given

to the rejected claim 23 above.

For claim 39, Kanefsky teaches a program product comprising; a computer-readable storage medium "means recorded on a medium for retrieving data from an anchor node in the tree and plurality of neighboring nodes affected by the operation" (See paragraph [0020, 0067-0068])

"means recorded on a medium for querying a cache for key representative of the node and the plurality of neighboring nodes based on the retrieved data" (See paragraph [0021-0022])

"means recorded on a medium for performing the operation on the retrieved data to generate post-operation data, replacing the retrieved data with the post-operation data and storing the post-operation data in the cache based on the key if the query does not find a match" (See paragraph[0021-0022, 0038])

For claim 51, Kanefsky teaches "wherein the storage medium is a magnetic recording medium" (See paragraph [0045-0047])

For claim 52, Kanefsky teaches "wherein the storage medium is an optical recording medium" (See paragraph [0045-0047])

For claim 53, Kanefsky teaches "wherein the storage medium is a network distribution medium" (See paragraph [0045-0047])

For claim 54, Kanefsky teaches "a method for performing an operation on a

hierarchical data tree (See paragraph [0072-0074, fig. 4&5]), comprising: visiting an

anchor node in the tree" (See paragraph [0067-0068, fig. 4]);

"retrieving data from the anchor node and a plurality of neighboring nodes each

potentially affected by the operation"(See paragraph [0020, 0067-0068, fig. 4,5&6]);

"querying a cache for a key representing the anchor node and the plurality of

neighboring nodes based on the retrieved data" (See paragraph [0020-0023,0032-

0035])

"if the *query* finds a match, replacing the pre-operation retrieved data with cached

data " (See paragraph [0021-0022]); and

"if the query does not find a match, performing the operation on the retrieved data to

generate post-operation data, replacing the retrieved data with the post-operation data

and storing the post-operation data in the cache based key"(See paragraph [0031-

0022, 0038]).

For claim 55, Kanefsky teaches "wherein at least one of plurality retrieved

neighboring nodes each potentially affected by the operation is separated from the

node by at least one node" (See paragraph [0063-0064]).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 7-10, 24-26, 36-38, 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steven Kanefsky (U.S. Pub No. 2001/0044327) in the view of Hsiung et al (Pat No U.S 6,865,509) hereinafter "Hsiung".

        For claim 7, Kanefsky teaches the claim limitation but does not explicitly teach "wherein the operation modifies a parameter of at least one of the anchor node and the plurality of neighboring nodes"

However, Hsiung teaches "wherein the operation modifies a parameter of at least one of the anchor node and the plurality of neighboring nodes" (Hsiung teaches processing information or data over a network or computers, and also monitoring and controlling a process using multi-dimensional data such as temperature, pressure [Col 1 - Col 2])

        It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kanefsky with the teachings of Hsiung using sensors to monitor process parameters such as temperature, pressure, stress and the like. Whereby displays can generally outputs signals such as temperature in a graphical user interface form or numerical value in Celsius.

        For claim 8, Kanefsky does not explicitly teach "wherein the parameter is a temperature of the at least one of the anchor node and the plurality of neighboring nodes".

However, Hsiung teaches "wherein the parameter is a temperature of the at least one

of the anchor node and the plurality of neighboring nodes"(Col1-2)

For claim 9, Kanefsky does not explicitly teach "wherein the parameter is a

pressure of the at least one of the anchor node and the plurality of neighboring

nodes".

However, Hsiung teaches "wherein the parameter is a pressure of the at least one of

the anchor node and the plurality of neighboring nodes"(Col.1-2)

For claim 10, Kanefsky does not explicitly teach "wherein the parameter is a

stress of the at least one of the anchor node and the plurality of neighboring nodes".

However, Hsiung teaches "wherein the parameter is a stress of the at least one of the

anchor node and the plurality of neighboring nodes"(Col 1-2)

For claim 24, Kanefsky teaches the claim limitation but does not explicitly

teaches "wherein the tree represents a microelectronic device".

However, Hsiung teaches "wherein the tree represents a microelectronic device"(Co.

15, lines 16-20).

For claim 25, Kanefsky does not explicitly teach "wherein the microelectronic

device is a MEMS device".

However, Hsiung teaches "wherein the microelectronic device is a MEMS device".
(Col. 15, lines 16-20).

For claim 26, Kanefsky does not explicitly teach "wherein the microelectronic
device is a NEMS device".

However, Hsiung teaches "wherein the microelectronic device is a MEMS device".
(Col. 15, lines 16-20).

For claims 36 and 48, these claims have substantially the same limitation as
claim 24. These limitations have already been addressed in the rejection of claim 24.
Therefore, they are rejected on similar grounds corresponding to the arguments given
to the rejected claim 24 above.

For claims 37 and 49, these claims have substantially the same limitation as
claim 25. These limitations have already been addressed in the rejection of claim 25.
Therefore, they are rejected on similar grounds corresponding to the arguments given
to the rejected claim 25 above.

For claims 38 and 50, these claims have substantially the same limitation as
claim 26. These limitations have already been addressed in the rejection of claim 26.
Therefore, they are rejected on similar grounds corresponding to the arguments given
to the rejected claim 26 above.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the.time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Steven Kanefsky (U.S. Pub No. 2001/0044327) in view of Schreiber et al. (Pub No.

2002/0138353) hereinafter "Schreiber"

For claim 15, Kanefsky teaches the claim limitation but does not explicitly teach

"wherein the tree is an X-dimensional tree and the plurality of neighboring nodes

includes at least X neighboring nodes".

However, Schreiber teaches "wherein the tree is an X-dimensional tree and the

plurality of neighboring nodes includes at least X neighboring nodes". (multi-

dimensional...three-dimensional cube see Schreiber fig. 7[sheet 5of 21] &fig.8B

(sheet 6 of 21) & paragraph 0102-0103 & 0107-0110 &0016).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of

the invention to modify Kanefskys teaches by Schreiber, because using the

arrangement of nodes with the combination of the tree having a X-dimensional region,

would have given those skilled in the art the skills to effectively incorporate two/three/

X-dimensional region in a directed acyclic graph structure.

For claim 16, this claim has substantially the same limitation as claim 15. These limitations have already been addressed in the rejection of claim 15. Therefore, they are rejected on similar grounds corresponding to the arguments given to the rejected claim 15 above.

For claim 17 Kanefsky teaches the claim limitation but does not teach "wherein the tree has a directed acyclic graph structure".

However, Schreiber teaches "wherein the tree has a directed acyclic graph structure"(See paragraph [0060, 0069, 0072, 0087& fig. 3-6])

For claim 18, Kanefsky teaches the claim limitation but does not teach "wherein the tree is an octree".

However, Schreiber teaches "wherein the tree is an octree" (multi-dimensional...three-dimensional cube see Schreiber fig. 7[sheet 5of 21] &fig.8B (sheet 6 of 21) & paragraph 0102-0103 & 0107-0110 &0016).

For claim 19, Kanefsky teaches the claim limitation but does not teach "wherein the tree is a quadtree"

However, Schreiber teaches "wherein the tree is a quadtree" (multi-dimensional...three-dimensional cube see Schreiber fig. 7[sheet 5of 21] &fig.8B (sheet 6 of 21) & paragraph 0102-0103 & 0107-0110 &0016).

For claim 20, Kanefsky teaches the claim limitation but does not teach "wherein

the tree is a shared tree".

However, Schreiber teaches "wherein the tree is a shared tree" (multi

dimensional...three-dimensional cube see Schreiber fig. 7[sheet 5of 21] &fig.8B

(sheet 6 of 21) & paragraph 0102-0103 & 0107-0110 &0016).

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Steven Kanefsky (U.S. Pub No. 2001/0044327) and Schreiber et al. (Pub No.

2002/0138353) hereinafter "Schreiber", in the view of Hsiung et al (Pat No U.S

6,865,509) hereinafter "Hsiung".

For claim 11, Kanefsky and Schreiber do not explicitly teach "wherein the

parameter is an equivalence class".

However Hsiung teaches "wherein the parameter is an equivalence class" (Col. 2, lines50-57, Col. 3, lines 14-31, Col. 13, lines 49-67, Col. 14, lines 1-25, Col 14, lines 27-39, Col. 15, lines 9-20)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kanefsky and Schreiber by the teachings of Hsiung above, because using the enhanced method and system of an arrangement of nodes in forming a directed acyclic graph with the representation of material composition of Hsiung would have given those skilled in the art the steps to effectively incorporate a material composition to the arrangement of nodes in forming a directed acyclic graph.

For claim 12, most of the limitation of this claim has been noted in the rejection of claim 1. In addition Kanefsky and Schreiber do not explicitly teach "wherein the parameter is a composition of the at least one of the anchor node and the plurality of neighboring nodes".

However, Hsiung teaches "wherein the parameter is a composition of the at least one of the anchor node and the plurality of neighboring nodes"(Col. 2, lines50-57, Col. 3, lines 14-31, Col. 13, lines 49-67, Col. 14, lines 1-25, Col 14, lines 27-39, Col. 15, lines 9-20)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kanefsky and Schreiber by the teachings of Hsiung above, because using the enhanced method and system of an arrangement of nodes

in forming a directed acyclic graph with the representation of material composition of

Hsiung would have given those skilled in the art the steps to effectively incorporate a

material composition to the arrangement of nodes in forming a directed acyclic graph.

For claim 13, Kanefsky and Schreiber do not explicitly teach "wherein the

composition comprises a percentage of occupation of the at least one of the anchor

node and the plurality of neighboring nodes by a predetermined material".

However, Hsiung teaches "wherein the composition comprises a percentage of

occupation of the at least one of the anchor node and the plurality of neighboring

nodes by a predetermined material"(Col. 2, lines50-57, Col. 3, lines 14-31, Col. 13, ·

lines 49-67, Col. 14, lines 1-25, Col 14, lines 27-39, Col. 15, lines 9-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to have been motivated to modify the combination of Kanefsky

and Schreiber per the above to effectively incorporate " a material composition" to the

arrangement of nodes in forming a directed acyclic graph. .

For claim 14, Kanefsky and Schreiber do not explicitly teach "wherein the

composition comprises a percentage of occupation of the at least one of the anchor

node and the plurality of neighboring nodes by each of a plurality of predetermined

materials".   ·

However, Hsiung teaches "wherein the composition comprises a percentage of

occupation of the at least one of the anchor node and the plurality of neighboring

nodes by each of a plurality of predetermined materials" (Col. 2, lines50-57, Col. 3,

lines 14-31, Col. 13, lines 49-67, Col. 14, lines 1-25, Col 14, lines 27-39, Col. 15, lines

9-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to have been motivated to modify the combination of Kanefsky

and Schreiber per the above to effectively incorporate " a material composition" to the

arrangement of nodes in forming a directed acyclic graph.

CONCLUSION

10.   The following prior art cited on the PTO-892 form, not relied upon, is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUBUSOLA ONI whose telephone number is 571-272-2738. The examiner can normally be reached on 7.30-5.00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIM VO can be reached on 571-272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

OLUBUSOLA ONI
Examiner
Art Unit 2168

TIM VO
PRIMARY EXAMINER